That Isn't Science!

Larry Wall once noted that the scientificness of a field is inversely correlated to how much the word "science" appears in its name. Physics, of course, doesn't have science in the name and is the most scientific of all sciences. Then comes biology and and ethology and so on. Then come the non-sciences like Computer Science and Poultry Science. And worst of all is Scientology.

In general, whenever someone tells you that "science" has decreed that you should do one thing or another that doesn't seem reasonable, it's probably because they're trying to pull one over on you, whether it's the "scientific" medicines you see on late-night TV or the science of the behaviorists who say you shouldn't love your kids.

But nowhere is this more evident than when people try to tell you what science itself is. This field of meta-science seems to attract more charlatans and malintents than any other. If you control how the very notion of what's scientific is defined — well, then that's real power. Even if the very idea is patently absurd. (A real scientist would never tell you that doing X isn't really science; their goal is to get the truth, not sit around making rules about who's in and who's out.)

For much of the outside world, the test for a real science is "falsifiability" — the possibility that there could be evidence proving the claim wrong. This notion was invented by Karl Popper, who was himself an enemy of science who tried to insist that science never actually made any progress, that we never learned anything more about the world.

But even if we put aside this noxious pedigree, Popper's definition is still absurd. Take the distinction between astronomy and astrology. We would all agree, I think, that the first is a science but the second isn't. But both of their predictions are equally falsifiable — astrology makes a dozen falsifiable predictions in the newspaper five times a week. Popper's criteria isn't of much help to us, even on such a basic case.

Sadly, like many American intellectuals, the Supreme Court assumed that falsifiability was a standard scientific test. In the *Daubert* case it, as Chris Mooney summarizes the view of the *American Journal of Public Health*, "blundered miserably" and set judges the task of using this "deeply confused philosophy of science" to act as gatekeepers in keeping scientific claims from juries. Actual scientists like DefendingScience.org is working to undo this these mistakes, but you wouldn't know it from the rhetoric — after all, *Daubert*'s defenders claim their just trying to uphold sound scientific standards. (Chris Mooney's book *The Republican War on Science*, among others, has a fascinating exposÃ© of the junk science/sound science notions cooked up by the PR industry to trash actual science. But that's another subject.)

What are the real effects, though? Daubert was a parent whose child was born with birth defects they believed were caused by the drug Benedictin which, in animal studies, appeared to cause the defects they were suffering. By making it harder for science to be presented in Court, these kinds of rulings make it easier for drug companies to claim there's no "sound science" that they're hurting anyone.

America isn't alone, however. In Britain a group supporting what they call "evidence-based medicine" is trying to tighten restrictions on what experiments can be examined when approving drugs. Evidence-based medicine? Who could be against that! But again, they're playing the same games. Behind evidence-based science are a bunch of very bizarre claims about what science is and isn't, taken not from doctors or scientists, but from econometricians (the subspecialty of economics that has to do with calculating things), which have quite a few problems of their own when it comes to the subject of evidence.

Under "evidence-based medicine" rules, doctors aren't allowed to prescribe drugs on the basis of case studies and other reports; instead, the only real evidence are large double-blind random controlled trials whose results have a less than 5% probability of being due to chance. (Why 5%? No good reason. But according to the EBM people anything more than that isn't evidence.)

Again, you have the same negative effects: when someone tries to claim in court that a certain drug destroyed their life, the drug company can claim that there's no "evidence" to support this if the studies just happen to be 94% likely instead of 95%, or if there's only a series of case studies instead of a controlled trial.

This isn't evidence, this isn't rationality, this isn't science. Science is about trying to get the truth about the world, using whatever mechanisms are most effective at the job, whether you're studying the nature of planets in space or the nature of other cultures. When someone tells you otherwise, tries to insist that technique X or subject Y doesn't deserve the name science, it's probably because they're trying to pull a fast one on you.

You should follow me on twitter here.

October 18, 2006